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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/713,215 | 11/16/2000 | YASUNAGA KAYAMA | 107314 | 2926 |

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EXAMINER

KIM, PETER B

ART UNIT PAPER NUMBER

2851

DATE MAILED: 05/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/713,215

Applicant(s)

KAYAMA, YASUNAGA

Examiner

Peter B. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Apr. 21, 2003 has been entered.

Specification

The disclosure is objected to because of the following informalities: on page 10, line 1, "projection optical system 34" seems to be a typo.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-29 and 42-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding Claims 1 and 18, the term "main frame" is not defined in the written description.

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Regarding Claims 42-44, the term "transaction system" is not defined in the written description.

The remaining claims, not specifically mentioned, are rejected for incorporating the defects from the base claim by dependency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-8, 9-12, 18-41, and 45-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (Akimoto) (6,359,688) in view of Hayashi (6,036,162).

Akimoto discloses an exposure apparatus and a method of making an exposure apparatus and a method of exposing a pattern of a mask (7) onto a substrate or an object (W), with a projection system (PO), a holder (not shown) to hold the projection system, acceleration detector (16UY, 16Dy) located on the projection system to detect information concerning displacement of the projection system, an actuator (34), a driver connected to the actuator to drive the actuator in response to detection results of the detector (Fig. 2). Akimoto also discloses actuator including piezoelectric elements (col. 12, lines 13-16), a mask stage (8, 9) for holding and moving the mask, and a substrate stage or an object stage (12, 15) for moving and holding the substrate or the object. However, Akimoto does not disclose the actuator arranged on the holder for holding the projection system. Hayashi discloses in Figure 7, an exposure apparatus and method where

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the actuators (235) are located in the holder (224) and the acceleration detectors are located on the holder. Hayashi also discloses the mainframe (224) that mounts the projection system by means of the holder. Although, Akimoto and Hayashi does not disclose a distortion sensor, since both references discloses the acceleration sensor which detects oscillation, it would have been obvious to one of ordinary skill in the art to use distortion sensor. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the actuators on the holder and the acceleration detectors on the holder in order to reduce deformation of the apparatus and effectively suppress the vibration with high degree of accuracy (col. 4, lines 52-64).

2. Claims 13-17, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. (Akimoto) in view of Hayashi as applied to claims 1, 18 and 30 above, and further in view of Watson (5,959,427).

The further difference between modified Akimoto and the claimed invention is the exposure apparatus comprising a compensatory driving system that applied compensatory force to the stationary part of the object stage drive system. Watson discloses in Figure 3, an object stage drive system that includes movable part and stationary part and a compensatory driving system applies force to stationary part of the stage drive system and a compensatory driving system (60, 62) that applied force to the stationary part. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a compensatory driving system to the invention of Akimoto in order to ensure that there is no uncanceled reaction moment and no disturbance of the base stability (the abstract of Watson).

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Response to Arguments

Applicant argues that the written description includes the "transaction system" of Claim 42; however, the term is not found in the written description.

Applicant argues that the cited references do not teach suppressing a strain or influence of the holder that results from resonance of the projection system. However, with the vibration caused by the movement of the stage the resonance and oscillation of the projection system is inherent in all projection exposure systems. By suppressing the vibration, as taught by the prior art, the resonance of projection system is suppressed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Peter B. Kim
Patent Examiner
May 23, 2003